

# Preliminary Descriptions of some Japanese Triclad.

By

Isao Ijima, *Rigakuhakushi*,

and

Tokiö Kaburaki, *Rigakushi*.

## Maricola.

### 1. *Procerodes lactea*, n. sp.

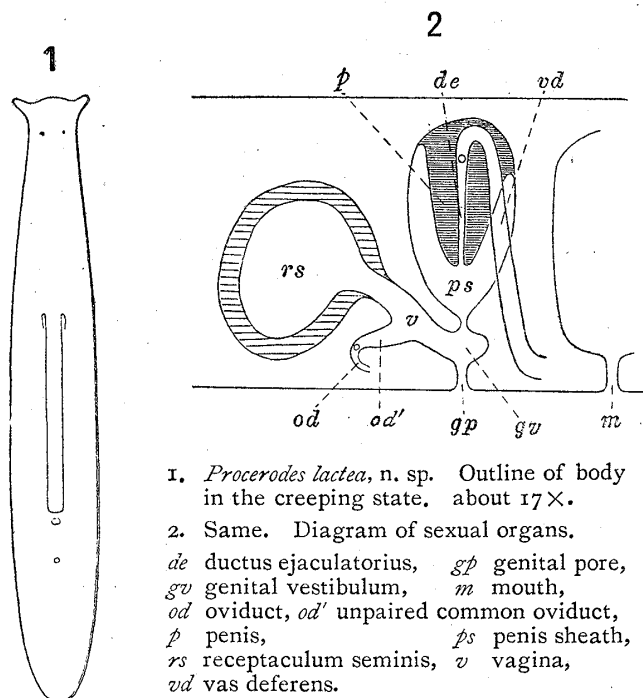
Woodcuts 1 and 2.

Frontal margin subtruncate, slightly crenate, being gently arched in the middle parts. Tentacles moderately long, rounded at end, antero-

laterally directed. Trunk indistinctly separated from head by a slight neck-like narrowing, elongate, slender, being in most parts of a nearly uniform breadth, rounded at posterior end.

Specimens fixed with sublimate solution measure 2-4 mm. long by about 1 mm. across in the broadest part.

Color milky white; digestive tracts appearing reddish or brownish.



1. *Procerodes lactea*, n. sp. Outline of body in the creeping state. about 17X.  
2. Same. Diagram of sexual organs.  
de ductus ejaculatorius, gp genital pore,  
gv genital vestibulum, m mouth,  
od oviduct, od' unpaired common oviduct,  
p penis, ps penis sheath,  
rs receptaculum seminis, v vagina,  
vd vas deferens.

Eyes two, crescentic in shape, situated well behind frontal margin,

separated from each other by a space somewhat longer than the distance of either eye from lateral body margin of the same side.

Mouth opening somewhat behind the beginning of the posterior third of body. Pharynx extending posteriorly from about the end of the anterior third of body, somewhat longer than one-third the body-length. Anterior gut trunk provided with 7 or 8 pairs of branches; posterior gut trunks with 14-18 outwardly directed branches.

Genital aperture at a distance behind mouth equal to about one-fifth that between the latter and the posterior body-end. Genital atrium divided into penis sheath and vestibulum by a constriction. Testes extremely numerous, spherical, dorsally situated in two lateral zones beginning from ovarian region and extending behind nearly to end of body. Vasa deferentia united into a slender ejaculatory duct in the bulbous part of penis; without vesicula seminalis. Penis comparatively small, conical, vertical. Ovaries two, situated ventrally between first and second branches of anterior gut trunk. Oviducts opening directly into a small outbulging of vagina at the postero-inferior aspect. Receptaculum seminis large, spherical, situated behind penis. Vagina running anteriorly and obliquely downward to join vestibulum from behind.

The species is apparently very closely related to *Pr. ulvæ* (Oersted), but differs from it in the absence of pigments and in the oviducts opening directly into the vaginal outbulging, instead of after uniting into an unpaired terminal duct.

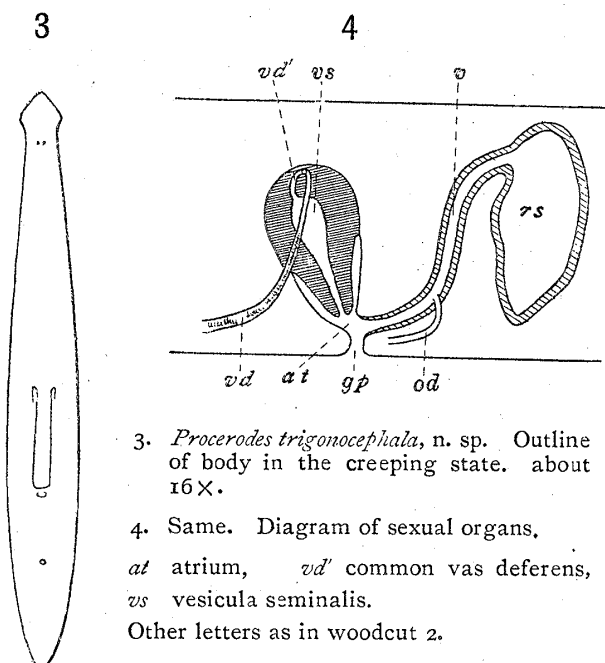
Locality :—Beneath stones on the beach between Yukanki and Meleya in Saghalin. Ijima coll., July 1906.

## 2. *Procerodes trigonocephala*, n. sp.

Woodcuts 3 and 4.

Anterior end triangular, without tentacles. Trunk gradually widening behind, broadest in the region of genital organs, then tapering to the posterior body-end which is somewhat rounded or obtusely pointed.

Large specimens in the creeping state 4 mm. long and 1 mm. broad; commonly smaller.



Body translucent, generally somewhat whitish; frontal margin and the region of eyes darkish; central region of head whitish; alimentary tracts appearing brownish, reddish or orange in color.

Eyes two, small, each surrounded by a clear space, situated far behind anterior body-end, the distance being more than three times that between the eyes. The

latter distance is about equal to one-half that between either eye and lateral body margin of the same side.

Mouth at about the hind end of the middle third of body. Pharynx inserted a short distance behind the middle of body. Anterior gut trunk with 7-9 pairs of branches; each posterior gut trunk with about 10 branches on both sides, those of inner sides being very short.

Genital aperture situated half-way between mouth and posterior body-end. Atrium simple. Testes numerous, small, situated ventrally in body and arranged on both sides of lateral nerve-cords from close behind ovaries to insertion of pharynx, but farther behind only on the outer side of same, ceasing altogether to exist at about the level of mouth. Vasa deferentia uniting in penis bulb into a short common duct, which soon opens into moderately wide and smooth-walled vesicula seminalis; the latter narrowed inferiorly into ductus ejaculatorius terminating at tip of penis, which is of a conical shape and subvertically disposed. Ovaries two, lying ventrally between fourth and fifth pairs of gut branches. Oviducts of both sides

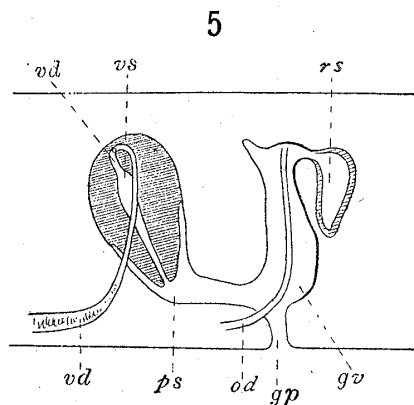
opening separately into vaginal canal. Receptaculum seminis situated behind penis, giving rise at its antero-superior part to vaginal canal, which runs down to open into genital atrium from behind.

Locality :—Estuary of a rivulet in Oginohama Port, Rikuzen Province. Collected by Ijima 1887 and by Kaburaki 1915.

### 3. *Procerodes limuli*, n. sp.

Woodcut 5.

Body in the preserved state lanceolate, pointed anteriorly, rounded posteriorly, convex above, flat below. Without pigments, but brownish due to the color of guts. Dimensions of large specimens  $3\frac{1}{2}$ –5 mm. long,  $1\frac{3}{4}$ – $2\frac{1}{2}$  mm. broad; usually smaller.



5. *Procerodes limuli*, n. sp. Diagram of sexual organs.

Index letters as in woodcuts 2 and 4.

Eyes two, small, crescentic. Mouth opening nearly between middle and posterior thirds of body. Pharynx inserted a short distance in front of the middle of body. Anterior gut trunk with 8–10 pairs of lateral branches; posterior trunks usually united at hind end, each with at least 16 lateral branches.

Genital aperture in front of the middle of the posterior third of body. Genital atrium divided into two chambers; the vestibule vertically ascending, wide, laterally outbulging. Testes numerous, situated ventrally along both sides of anterior gut trunk, extending from ovaries to the dividing point of gut trunks. Vasa deferentia united in the upper part of penis bulb. Vesicula seminalis not wide, passing below into slender ejaculatory duct. Intromittent part of penis conical, subvertical. Ovaries two, spherical, occupying ventral position between first and second pairs of gut branches. Oviducts open separately into

genital vestibulum at the upper end, where the small receptaculum also opens by a short stalk (vagina) from behind.

Possibly the species deserves to be made into a new genus, chiefly on account of the dorsal prolongation of genital vestibulum, of the oviducts opening separately into it without uniting into an unpaired common duct, and of the very short vagina.

Locality :—Numerous specimens of this species were collected in 1889 at Ajino, Prov. Bizen, by Professor Kishinouye. The worms occur in abundance on *Limulus longispina*, attached on the hard surface of the proximal segments of cephalothoracic appendages, especially of the last three pairs of these.

### Paludicola.

#### 4. *Bdellocephala annandalei*, n. sp.

Woodcuts 6—8.

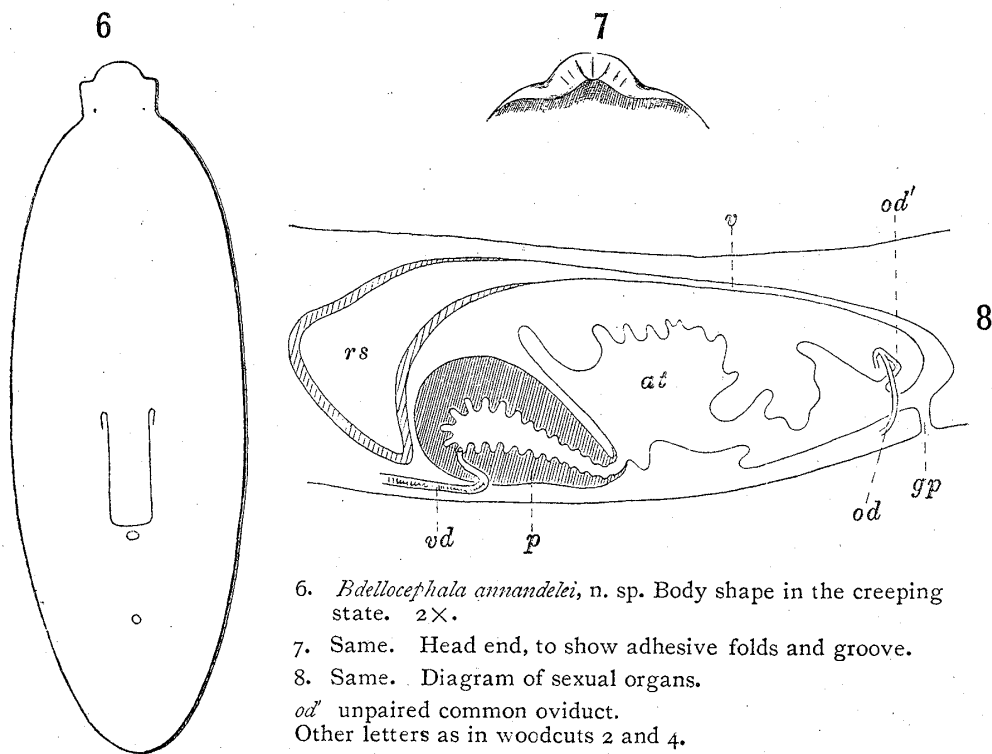
Body large, thick, elongate-ovate. Head lobe narrow and distinctly marked off from trunk; when in motion, less than one-third as broad as the broadest part of trunk. Frontal margin of head-lobe crenate; median convexity strongly arched, exhibiting some small adhesive folds on the inferiorly turned swollen edge (woodcut 7); close behind that edge a groove-like depression; lateral lobes not prominent. Trunk thick, convex above, flat beneath, rounded at posterior end. Commonly very large, reaching 40 mm. in length and 15 mm. in breadth at the pharynx region.

Color of dorsal surface variable, but usually reddish brown; the positions of pharynx and copulatory organs indicated by nearly colorless spaces. Color of ventral surface much lighter than that of dorsal.

Eyes two, widely apart, each surrounded by a clear space, situated at the hind border of head lobe.

Mouth slightly behind the hind end of the middle third of body. Pharynx comparatively short, inserted at about the middle of body, and of about one-sixth the length of entire body. Anterior gut trunk provided

with about 11 pairs of lateral branches; each posterior trunk with about 18 of same.



6. *Bdellocephala amandelei*, n. sp. Body shape in the creeping state. 2X.

7. Same. Head end, to show adhesive folds and groove.

8. Same. Diagram of sexual organs.

od' unpaired common oviduct.

Other letters as in woodcuts 2 and 4.

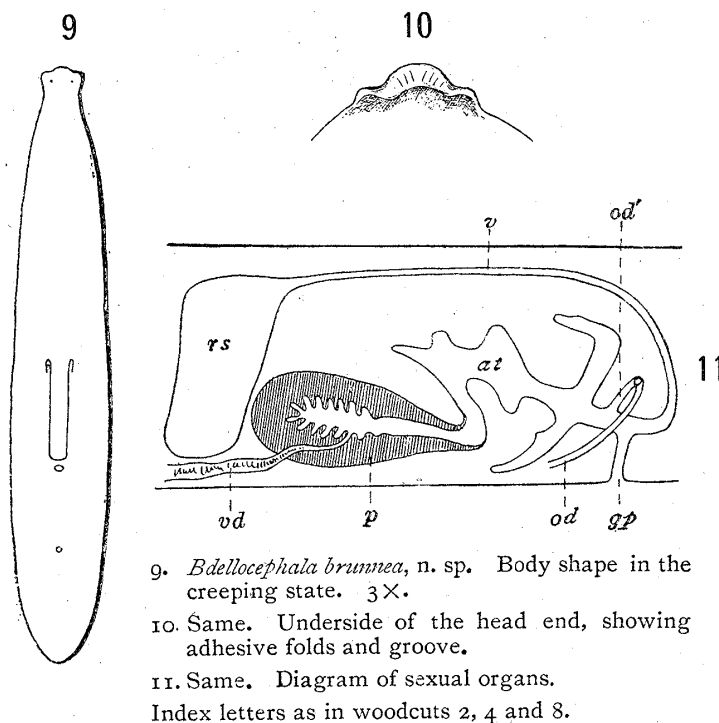
Genital opening situated a short distance in front of the middle between mouth and posterior body-end. Atrium spacious, prolonged, with irregularly folded wall, expanding forwards over penis. Testes numerous, situated ventrally in body on both sides of anterior gut trunk, extending from close behind ovaries posteriorly to insertion of pharynx. Penis pear-shaped, saccular, with strongly muscular wall, entirely imbedded in parenchyma, the internal cavity opening on the floor of the anterior part of atrium. Vasa deferentia make a forward turn just before entering penis; they open separately into the cavity of the latter. Ovaries two, small, placed between third and fourth pairs of gut branches. Oviducts open into the vestibular part of atrium by a short common duct coming from above. Receptaculum seminis situated close in front of penis. Vaginal canal slender, long, runs over entire length of atrium and opens into the vestibular part of atrium behind unpaired oviduct and just within genital pore.

Locality :—Lake Biwa, on muddy bottom at a depth of 30–45 fathoms.  
Collected by Dr. N. Annandale and Mr. T. Kawamura, Oct. 1915.

5. *Bdellocephala brunnea*, n. sp.

Woodcuts 9–11.

Body moderately large, rather slender. Head indistinctly marked off from trunk by a gentle neck-like narrowing of body. Frontal margin crenate; median lobe weakly arched, thrown into some adhesive folds on



the inferiorly turned swollen edge (woodcut 10); behind that edge a groove-like depression present; lateral lobes but little projecting. Breadth of frontal margin in the creeping state of the worm, less than half the greatest breadth of trunk. Trunk dorsally convex, ventrally flat, very gradually broadening posteriorly from neck to about

the region of sexual organs; posterior extremity of body rather rounded.

Body in the creeping state commonly 20–26 mm. long and 3–4 mm. broad; ratio of breadth and length 1 : 5–6½.

Color of body olive-brown, sometimes blackish, velvety; the parts containing guts usually darker than elsewhere.

Eyes two, each surrounded by a white space; distance between them about twice as long as that between either of them and the nearest point in the front margin or that in the lateral head margin.

Mouth situated at about the posterior end of the middle third of body. Pharynx insertion at about the middle of body. Anterior gut trunk with 7-9 pairs of branches; each posterior gut trunk usually with 13 lateral branches and about as many, but very short, inwardly directed branches.

Genital aperture nearly in the middle of the posterior third of body. Genital organs essentially as in the preceding species. Atrium an irregular prolonged space with wall thrown into folds; with an extensive annular space in front of the junction of oviduct. Testes numerous, small, arranged in two lateral longitudinal zones running along lateral body edges, from behind ovaries to close the posterior body-end; mostly lying ventral to the ends of lateral gut branches. Penis an elongate, muscular-walled, sack-like organ, opening behind into the anterior part of atrium on the floor; vasa deferentia opening into vesicula seminalis separately and without making a forward turn. Ovaries two, situated behind first (or second?) pair of gut branches. Oviducts united into a short unpaired duct before opening into the posterior part of genital atrium from above. Receptaculum seminis large, lying between penis and pharyngeal chamber. Vagina slender, traversing behind close under dorsal epidermis, at the end bending forward to join atrium from behind.

Localities:—Cool running brooks at following places: Yamada and Kanazuchi in Prov. Rikuzen, Koiwai in Prov. Rikuchu and Inawashiro in Prov. Iwashiro. Collected by Ijima 1887 and by Kaburaki 1915.

#### 6. *Planaria gonocphala* Dugès.

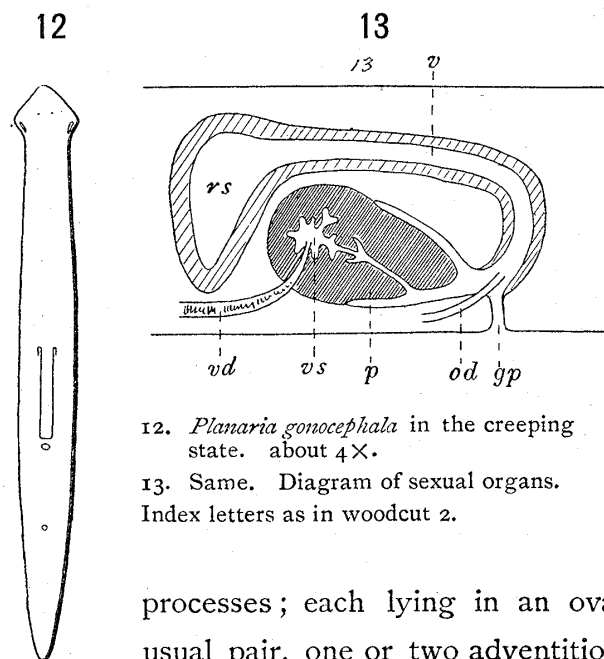
Woodcuts 12 and 13.

Head triangular, with lateral auricular processes, the sides forming in front a somewhat rounded median angle of approximately 60°. The body is broadest at the auricular processes. Trunk slender, with lateral margins even and nearly parallel for a large part of the length, but in the hind parts tapering to the bluntly pointed posterior extremity.

Commonly 20-33 mm. long and  $2\frac{1}{2}$ -4 mm. broad in the pharynx region. Ratio of breadth and length 1:7-10.



Color of body very variable. As seen on the dorsal side, full-grown individuals are generally of an olive-brown color, sometimes but not always with two darkish longitudinal bands running from behind eyes to posterior



12. *Planaria gonoccephala* in the creeping state. about 4X.

13. Same. Diagram of sexual organs. Index letters as in woodcut 2.

parts of body. Younger individuals are paler and the greater parts of body may present various sorts of hues—not unfrequently reddish, brownish, yellowish or greenish—according to varying coloration of the guts.

Eyes two, lying slightly in front of the line connecting the apices of auricular processes; each lying in an oval colorless area. Besides the usual pair, one or two adventitious eyes may sometimes occur.

Auricular sense organ slenderly reniform.

Mouth situated at a point somewhat behind the middle of body or even at about the commencement of posterior body third. Pharynx rather short. Anterior gut trunk with 8–12 pairs of branches; each posterior gut trunk with 13–18 outer branches and about as many, but much shorter, inner branches.

Genital aperture slightly in front of the middle of the posterior body third. Atrium simple. Testes numerous, placed close together in dorsal parts of body and arranged in two longitudinal zones which run from behind ovaries to nearly the posterior end of body. Vasa deferentia entering the bulbous end of penis separately and on the sides. Vesicula seminalis wide, with more or less folded wall. Ejaculatory duct narrow, opening externally on the underside of penis, not at the tip. In its course, the ejaculatory duct shows an obliquely anteriorly directed annular outbulging; it consequently brings about a small, conical, posteriorly directed process which projects into the said outbulging and which is axially traversed by a part

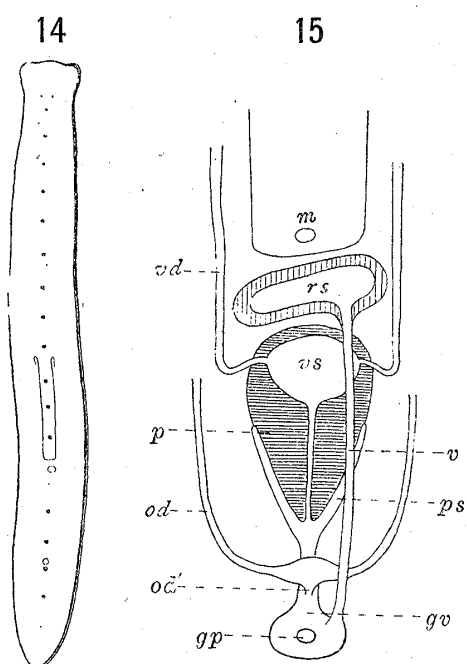
of the duct. Intromittent part of penis conical, massive, nearly horizontal. Ovaries two, placed ventrally between second and third gut branches. Oviducts open separately into the outer end of the rather wide vaginal canal, not directly into atrium. Receptaculum seminis moderately large, situated in front of penis.

Localities :—Under sunken objects in running as well as stagnant waters in various parts of Hondo. This species, which is also known from Europe and North America, is the commonest and the most widely distributed freshwater planarian in Japan.

7. *Planaria papillifera*, n. sp.

Woodcuts 14 and 15.

Frontal margin subtruncate, weakly crenate; lateral lobes rounded, not produced into tentacles. Head indistinctly marked off from trunk by a



14. *Planaria papillifera*, n. sp. in the creeping state. Dorsal papillae indicated by dots in the median line. 9X.

15. Same. Diagram of sexual organs. Index letters as in woodcuts 2, 4 and 8.

slight neck-like constriction. Trunk slender, nearly uniformly broad down to about the region of copulatory organs, then gradually tapering to the rounded hind end. Characteristic is the presence of a linear series of small, low and truncate papillae in the mid-dorsal line. The papillae number 20-25 in all; epidermis on them thickly set with rhabdites. The series of papillae commences sometimes in front of, and at other times behind, the eyes.

Dimensions of largest specimens in the creeping state: 7-8 mm. long and 1-1½ mm. broad. Ratio of breadth to length 1:6-7.

General color of dorsal surface in the larger specimens somewhat

grayish, due to scanty development of pigments; lighter in the median zone, in which the dorsal papillae again frequently appear as blackish spots. Young and small individuals quite or nearly colorless.

Eyes two, each surrounded by a colorless area, situated in the region of neck; distance between them less than that between either of them and lateral neck margin, and very much less than that between them and frontal margin.

Mouth opening between middle and posterior thirds of body. Pharynx inserted at about the middle of body length. Anterior main gut provided with 8-9 pairs of branches; posterior trunk with 14-17 external branches and with about as many, very small, internal branches.

Genital aperture at about the middle of the posterior third of body. Testes numerous, found on both sides of anterior gut trunk and also outside of posterior gut branches; mostly in ventral, but some in dorsal, parts of body. Vasa deferentia entering penis separately on the sides. Vesicula seminalis very wide, smooth-walled; ductus ejaculatorius narrow, and opening at tip of penis. Intromittent part of penis conical, horizontally lying. Ovaries two, situated in front of the first pair of gut branches in ventral position. A pair of large and lobed paraovaries present in front of ovaries. Oviducts unite into a single short duct before opening into elongate atrial passage on the dorsal side. Receptaculum seminis large, irregular-shaped, dorsally situated in front of penis, sending out vagina posteriorly over penis.

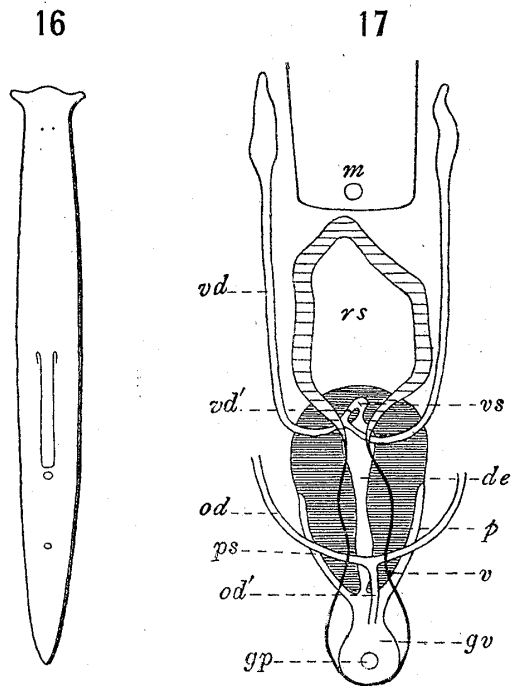
Locality:—The species was first discovered in November, 1889, by Professor Shishido in an old unused well in Tokyo (Ichigaya Ward). Subsequently, on several occasions, specimens were obtained by him and given to Ijima. In May, 1890, a number of cocoons apparently belonging to the species were collected in the same well. They contained embryos of about 2 mm. length.

8. *Planaria vivida*, n. sp.

Woodcuts 16 and 17.

Frontal margin subtruncate, gently arched in the middle, laterally

passing into front margin of moderately long, obtusely pointed tentacles. Head flat, not marked off by a neck-like narrowing of body. Trunk



16. *Planaria vivida*, n. sp. in the creeping state. 4×.

17. Same. Diagram of sexual organs. Index letters as in woodcuts 2, 4 and 8.

slender, only weakly convex above, nearly uniformly broad in the greater part of its length; hind end obtusely pointed, sometimes rounded.

Length of large specimens in the creeping state may reach 22 mm. in length and 4 mm. in breadth at pharynx region; usually smaller. Ratio of breadth to length 1 : 8–10.

Color on dorsal side usually blackish or dark olive-brown, especially dark in dorsal median parts. Small individuals, in which the pigments are not densely developed, may reveal the guts more or less distinctly in various colors. Ventral surface much paler than dorsal surface.

Eyes two, reniform, each in a half-moon-shaped colorless spot. Distance between them equal to about one-fourth their distance from frontal margin, and somewhat less than the distance of either eye from lateral margin of the same side.

Mouth opening situated at about the commencement of the posterior third of body. Pharynx inserted a short distance in front of the middle of body. Anterior gut trunk with 4–6 pairs of branches; posterior gut trunk with usually 12–14 lateral branches and about as many inwardly directed, very short branches.

Genital aperture behind mouth at a distance equal to about one-third that between mouth and posterior body-end. Testes numerous, about 60

in total number, situated ventrally in body. Sometimes they begin to exist from before ovaries. More usually they are found from close behind these backwards on both sides of anterior gut trunk but laterally to posterior gut trunks down to the level of genital pore, and behind this point, between the gut trunks. Vasa deferentia swollen along posterior one-fourth of pharynx, united into a short common duct in the antero-superior part of penis bulb before opening into the small vesicula seminalis. Ductus ejaculatorius wide, slightly narrowed in the middle parts. Intromittent part of penis conical, horizontally lying. Ovaries two, situated ventrally between first and second branches of anterior gut trunk. Oviducts unite into a single duct before opening into genital atrium from above. Receptaculum seminis very large. Vagina unusually wide, gently constricted in the middle of its course.

In external habitus the species closely resembles *Pl. alpina* Dana.

Localities :—Cool running waters in following places : Nikko ; Usui mountains ; hilly districts in provinces Rikuchu, Mutsu, Ugo, Iwashiro, &c. The species is the commonest in mountain streams of the parts of Japan indicated above.

9. *Planaria pellucida*, n. sp.

Woodcut 18.

In shape this species closely resembles the preceding. Frontal margin subtruncate, weakly crenate. Rounded auricular lobes scarcely prolonged into tentacles, anyway shorter than in *Pl. vivida*.

Large specimens in the creeping state measured 10 mm. long by about  $1\frac{1}{2}$  mm. across in the broadest part.

Body colorless, translucent, but with digestive tracts showing themselves in a milky white or a somewhat yellowish or a darkish color.

Eyes two, situated far behind frontal margin ; distance between them shorter than distance of either eye from lateral



18. *Planaria pellucida*, n. sp.  
Outline of body  
in the creeping  
state.  
about 7×.

body margin of the same side. Mouth at about the hind end of the middle third of body. Pharynx insertion at about the middle of body. Anterior gut trunk with 10-11 pairs of branches; each posterior gut trunk with about 20 lateral branches.

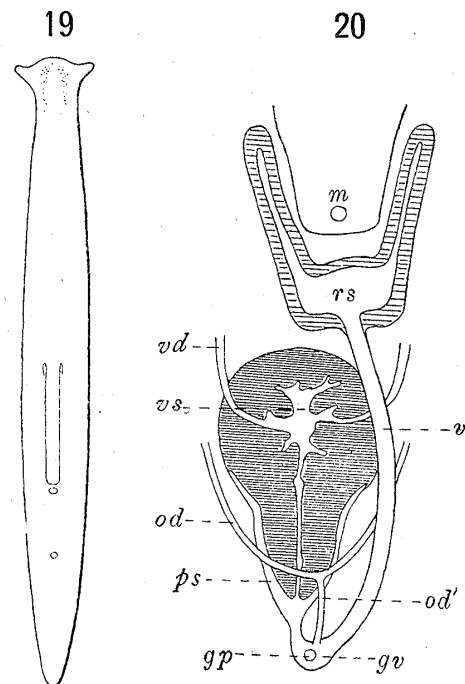
In all the specimens we have examined, sexual organs were not developed.

Locality:—Beneath stones and fallen leaves in a cool running stream in the wooded hills to the east of Toyohara (Vladimirofka), Saghalin. The species was collected together with *Polycelis karafto* described further on in this paper. Collected by Ijima, June 1906.

10. *Sorocelis sapporo*, n. sp.

Woodcuts 19 and 20.

Frontal margin subtruncate, with a gentle median convexity; head on both sides produced into moderately distinct tentacles rounded at end.



19. *Sorocelis sapporo*, n. sp. in the creeping state. about 4×.

20. Same. Diagram of sexual organs. Index letters as in woodcuts 2, 4 and 8.

Trunk in the creeping state slender, being for the most part of a nearly uniform breadth; obtusely pointed at the posterior extremity.

Large specimens in the creeping state measure 17 mm. in length and 2 mm. in breadth at pharynx region; mostly smaller; breadth and length in the proportion of 1 to 6-8.

Nearly colorless and translucent, but digestive tracts revealing themselves in milky white, yellowish, brownish, darkish or even pinkish color.

Eyes extremely small, numerous, increasing in number with growth of body, but never quite reaching 100 in total number; distributed in two

longitudinal zones which converge and meet in front and thus form a horseshoe-shaped tract, situated a considerable distance apart from head margin both in front and laterally ; posteriorly the tract extends to about the third pair of gut branches.

Mouth situated at about between middle and posterior thirds of body. Pharynx inserted at about the middle of body or slightly in front of it. Anterior gut trunk with 8 or 9 pairs of branches ; each posterior gut trunk with 18-20 lateral branches and about as many, but extremely short, innerly directed branches.

Genital pore situated behind mouth at a distance equal to about one-third that between mouth and posterior body-end. Atrium divided into two cavities. Testes about 18-22 in number on either side, lying ventrally along both sides of anterior gut trunk, extending from ovarian region to the insertion of pharynx. Vasa deferentia opening separately into vesicula seminalis on the sides. Wall of the latter thrown into irregular folds. Ejaculatory duct narrow, opening at tip of penis. Penis bulb spherical ; intromittent part of penis conical, horizontally directed. Ovaries two, placed ventrally between first and second, sometimes between second and third, branches of anterior gut trunk. Oviducts unite into an unpaired common duct on the dorsal side of penis sheath ; the unpaired duct opens into genital vestibulum dorsally and to the left of vagina. Receptaculum seminis dorsally situated, U-shaped and clasping from behind the posterior end of pharyngeal chamber. Vagina runs over penis sheath somewhat to the right of median line, at the end passing into genital vestibulum from above.

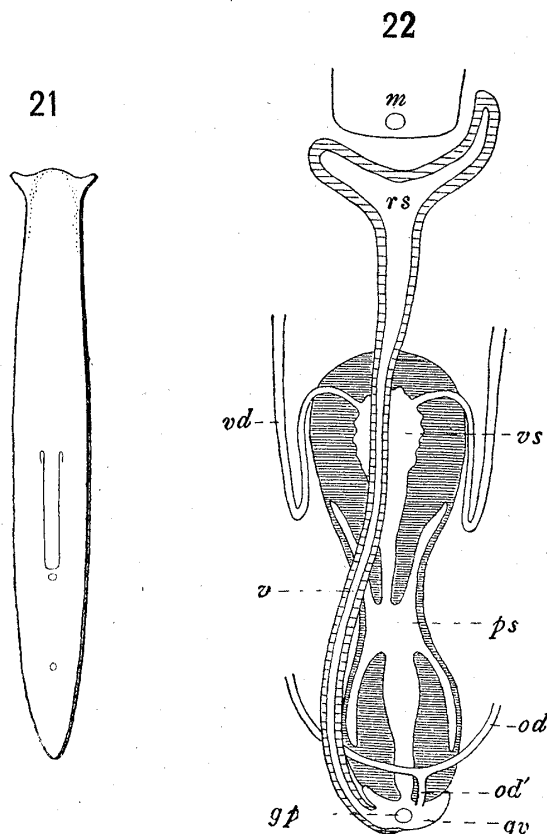
Locality :—Common in the clear brook flowing through the grounds of Sapporo Agricultural College in Hokkaido. Collected by Ijima, Oct. 1913.

11. *Polycelis auriculata*, n. sp.

Woodcuts 21 and 22.

Frontal margin subtruncate, with a gentle median convexity. Head end produced laterally into moderately distinct tentacles, rounded at tip

and slightly anteriorly directed. Body slender, superiorly convex, inferiorly flat, in the creeping state with lateral margins running nearly parallel for



21. *Polycelis auriculata*, n. sp. in the creeping state. about 4×.

22. Same. Diagram of sexual organs. Index letters as in woodcuts 2, 4 and 8.

the most part; posterior body-end rather rounded than obtusely pointed.

Exceptionally large specimens in the fully extended state reach 25 mm. in length and about  $3\frac{1}{2}$  mm. in breadth; commonly smaller, 10–15 mm. long by 1–1 $\frac{1}{2}$  mm. broad in the creeping state; breadth and length in the ratio of 1 : 7–10.

Color of dorsal surface generally sepia-brown, the guts indistinctly showing themselves in a dark brownish color or in a variety of other colors incidental to gut contents. Ventral surface of a pale color.

Eyes extremely small, numerous, numbering 30–73 on either side, distributed in a

horseshoe-shaped tract close to head margin, there existing in the width of that tract commonly more than one eyes and only occasionally a single eye. The tract may extend posteriorly for a length equal to about one-eighth or one-sixth the entire body-length.

Mouth situated at about the hind end of the middle third of body. Pharynx inserted at about the middle of body-length. Anterior gut trunk giving off 6–9 pairs of branches; each posterior trunk with usually 10–17 lateral branches, those inwardly directed being either very small or, as is frequently the case, joining together the two trunks.



Genital aperture at about the middle of the posterior third of body. Atrium divided into two chambers, the penis sheath and the vestibulum, separated by a strongly muscular and tubular diaphragm, the free end of which is retroverted into the former. Penis sheath with muscular wall continuous with that of penis and thickest on the dorsal side. Testes numbering about 19-21 on either side of body, occupying ventral position on both sides of anterior gut trunk and limited in their distribution to between ovaries and pharynx insertion. Vasa deferentia in the posterior parts make forward turn, rising upward at the same time, before they open separately into penis. Vesicula seminalis wide, with somewhat folded wall, passing gradually into wide ejaculatory duct which opens at tip of penis. Intromittent part of penis conical, horizontal. Ovaries two, spherical, placed ventrally between first and second pairs of gut branches. Oviducts united at the end into a short single duct at a point dorsal to atrial diaphragm, opening into vestibulum just behind the latter. Receptaculum seminis simply tubular at an early stage of development; later the anterior blind end becomes bent to the right or branches somewhat in the shape of Y. Vagina opening dorsally into vestibulum on the left of median line.

Localities :—Both running and standing waters at following localities : Nikko; Mt. Iwate in Prov. Rikuchu; Towada Lake in Prov. Mutsu; Ōzawa in Prov. Ugo; Mt. Bantai in Prov. Iwashiro. Collected by Ijima, 1886, and by Kaburaki, 1914 and 1915.

12. *Polycelis karkato*, n. sp.

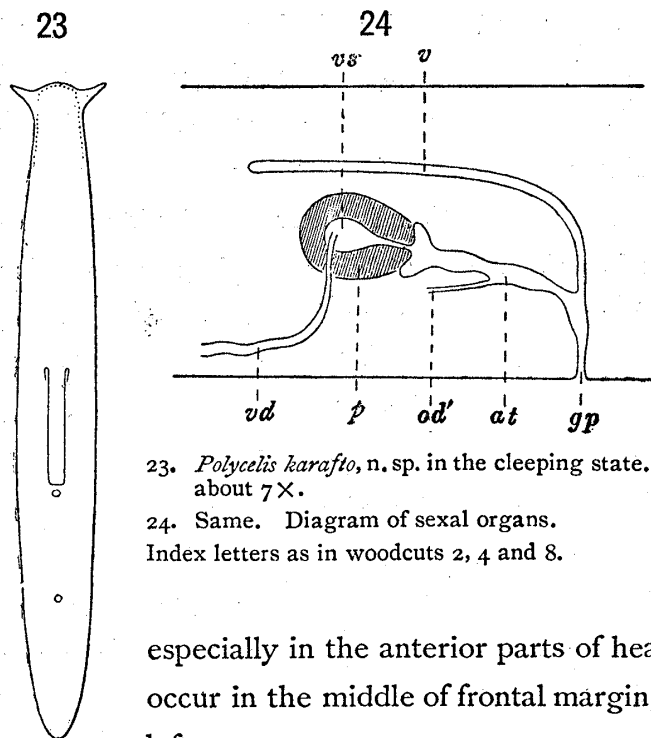
Woodcuts 23 and 24.

Head end shaped nearly as in the preceding species, but tentacles somewhat longer and more pointed at end. Trunk slender, nearly uniformly broad in most parts, obtusely pointed at posterior end.

A large specimen in the creeping state measured 12 mm. in length and 2 mm. in greatest breadth. Commonly smaller, breadth equalling about one-fifth or one-sixth the length.

Color of dorsal surface dark brown; showing two, longitudinally

running, ill-defined darker bands. Ventral surface lighter; the course of longitudinal nerve-cords indicated by two dark lines.



23. *Polycelis kurafto*, n. sp. in the sleeping state. about 7X.

24. Same. Diagram of sexual organs. Index letters as in woodcuts 2, 4 and 8.

Eyes small, numerous, found along and close to margins of head, on both sides extending behind to about the second pair of gut branches. They are arranged in a single row in the smaller specimens; but in the larger ones, they may be increased to such a number that several are found in the width of the ocellated zone,

especially in the anterior parts of head. A gap in the zone may occur in the middle of frontal margin, separating it into right and left zones.

Mouth at about the hind end of the middle third of body. Pharynx insertion situated a short distance in front of the middle of body. Anterior gut trunk with 5-7 pairs of branches; posterior gut trunks each with about 15 lateral branches.

Genital aperture situated nearly midway between mouth and hind end of body, leading into long and canalar atrium. Testes numerous, situated ventrally along both sides of anterior gut trunk and extending from ovarian region to insertion of pharynx. Vasa deferentia opening separately into moderately wide vesicula seminalis, which passes behind into slender ejaculatory duct. Penis small, its muscular wall not sharply defined from surrounding mesenchyme; horizontally disposed, the free end but little projecting into the widened anterior end of canalar atrium. Ovaries two, placed ventrally in front of the first pair of gut branches. Course of oviducts could not be distinctly traced in the few mature or nearly mature specimens

on hand; a short stretch of a longitudinal canal, running along the ventral side of atrium and joining this at a point about midway between penis tip and the junction of vagina with atrium, probably represents the unpaired terminal part of united oviducts. Receptaculum seminis tubular, slender, running over penis and extending a short distance beyond this anteriorly.

Localities:—Cool running brooks in the wooded hills to the east of Toyohara (Vladimirofka), Saghalin, found together with *Planaria pellucida*. Also obtained in a spring near Tretia Padi, north of Korsakoff, Saghalin. Ijima coll., June 1906.